ATOMIC ENERGY

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Dear Sir:

A new plant for production of uranium-235 by the gaseous diffusion process is to be erected near Paducah, Kentucky. Initial funds for the construction work are provided in the $1,050,000,000.00 appropriation now under consideration by Congress, and which is supplementary to the USAEC's current operating budget. This new plant will add substantial quantities of uranium-235 to the US's atomic weapons production phases, and help enlarge the stockpile of these weapons. It marks a still further intensification of the speed-up in the US's uranium-235 output. Now, at Oak Ridge, Tenn., the $60 million K-29, and the $185 million K-31 plants, which are under construction there, will increase by several factors the capacity of the original K-25 plant, in producing uranium-235 by the gaseous diffusion process.

Additional electrical power for this new plant (as above) will be provided by a new utility, Electric Energy, Inc., which will operate power generating facilities with an aggregate capacity of 500,000 KW. The new utility will be formed by the Central Illinois Public Service Co., Springfield, Ill.; Illinois Power Co., Decatur, Ill.; Kentucky Utilities Co., Lexington, Ky.; Middle South Utilities, Inc., N.Y.; and the Union Electric Co., St. Louis, Mo. Facilities of Electric Energy will be interconnected with those of the five contracting companies, so that standby and emergency power would be available. Funds for the new firm will be raised by borrowing approximately $61.5 million from two institutional investors, and the investment of approximately $3.5 million by the five utilities in the capital stock of the new company.

A new building to house its engineering and manufacturing operations, as well as certain phases of its radiochemical program, will be constructed by Tracerlab, Inc., in West Concord, Mass., according to William E. Barbour, Jr. president of the Boston nuclear products concern. The move marks the second major expansion of Tracerlab, which was incorporated in 1946 to promote the use of radioactive materials in medicine, scientific research, and industry.

Estimated to cost $3.1 billion over the next three years, a civil defense plan for preparation against an atomic bomb attack is now under consideration by Congress. Prepared by the National Security Resources Board, the plan calls for special equipment; for construction of shelters; for a stockpile of supplies; and for communications and control centers. Federal, state and local governments are to share costs....Meanwhile, in New York last week, a disaster plan for the medical profession in the event of an atomic bomb attack was issued by that state's Civil Defense Director, Col. Lawrence Wilkinson. The plan estimates that an atomic bomb attack on New York City would result in 27,000 severely burned; 13,000 with fractures, open wounds, and crushing injuries; 12,000 with severe shock; and 12,000 with radiation injury.

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AT THE ATOMIC CITIES & CENTERS IN THE UNITED STATES...

SAVANNAH RIVER PLANT, Georgia- With preliminary work under way on the tritium production plant, here at this 250,000 acre site (20 air miles southeast of Augusta, Ga.), a training program for the people connected with this hydrogen bomb materials manufacturing project has been initiated at Argonne National Laboratory, near Chicago. At Argonne, where the reactor production units for this job are being designed, the training and development program will be conducted jointly with E. I. du Pont de Nemours & Co., the prime contractor at Savannah River. Dr. W. H. Zinn, Argonne director, said du Pont scientific and technical people would spend 6 to 18 months at Argonne.

Last week Congress considered a supplemental appropriation for the USAEC of $1,050,000,000.00, part of which would be for this Savannah River Plant, and part for the new Paducah, Ky., U-235 plant (p. 1, this LETTER). (First funds for this production phase of tritium manufacture were in a $260,000,000.00 appropriation granted last September to the USAEC, as supplemental to its current operating budget of $947,970,00.00.)

OAK RIDGE, Tennessee- A special two weeks advanced medical course in radioisotope work will be given here by the Oak Ridge Institute of Nuclear Studies (ORINS), beginning Feb. 5th, 1951. The course is intended for research workers in the field of medicine who have had some experience in the basic techniques of using radioisotopes. Inquiries concerning the course should be directed to Dr. R. T. Overman, ORINS, P O Box 117, Oak Ridge, Tenn.

Nation-wide administration of all USAEC pre-doctoral and post-doctoral fellowships for the 1951-52 academic year will now be handled by ORINS (above). The new arrangement replaces the old fellowship boards; in addition, final selection of the fellows will be made by a national fellowship board to be appointed by the Institute.

LOS ALAMOS, New Mexico- General use is being made by the Santa Fe Operations Office (SFO) here, of the National Production Administration's defense order (DO) priorities, for SFO's operational and construction programs, which encompass Los Alamos Scientific Laboratory, Sandia Base (Albuquerque) atomic weapons unit, Salton Sea (Calif.) atomic weapons station, etc. These DO priorities are being applied for operational programs totaling about $19,000,000.00 in dollar volume deliveries for the current three month period, and $54,000,000.00 for construction purpose commitments over a nine month period. This is equivalent to 15% of the total USAEC construction requirements nationally of $360,000,000.00.

NEW PRODUCTS & INSTRUMENTS...for nuclear work...

Calcium and cadmium tungstates, as scintillation counter phosphors used in conjunction with photomultiplier tubes. Manufacturer states the total response of these tungstates to the gamma rays of radium is equal to, and in some cases better, than organic or thallium-activated potassium iodide phosphors. However, pulse height distribution curves for these tungstates are somewhat less favorable than those exhibited by anthracene. Offered as tungstate rods or tungstate "crackle".--Linde Air Products Co., 30 E. 42nd St., New York, N.Y.

"Staticmaster" is an assembly of camel's-hair brush, stainless-steel ferrule, wood handle, and a strip of polonium under the ferrule. Manufacturer states the ionizing action of the alpha particles, emitted by the polonium, effectively ground any static charges generated when the brush is used to remove dust and lint from such surfaces as glass slides, optical lenses, plastic surfaces, etc. Two sizes, 1 and 3-inches in width.--Nuclear Products Co., 2148 Newport Blvd., Costa Mesa, Calif.

Manufacturers of nuclear instruments who will display their products at the 117th annual meeting of the American Association for the Advancement of Science in Cleveland, December 12-26, include: Cambridge Instrument Co., New York 17; Kelley-Koett Manufacturing Co., Covington, Ky.; Nuclear Instrument & Chemical Corp., Chicago; Radiation Counter Laboratories, Chicago; Tracerlab, Inc., Boston, Mass.; and Victoreen Instrument Co., Cleveland, Ohio.

EXPERIMENTAL & DEVELOPMENT WORK...in the nuclear field....

A Lucite syringe shield for protection against irradiation during intravenous administration of beta-emitting radioisotopes, has been developed by A. Pearl, W. F. Bethard, and L. O. Jacobson, of the Biology Div., Argonne National Laboratory, and the Department of Medicine, University of Chicago. The syringe shield, which consists of a cylindrical Lucite barrel into which the syringe fits and locks with a 90-degree turn, was designed for the therapist who handles the large single doses of phosphorous-32 (6 to 8 mc) used therapeutically in such diseases as polycythemia vera, since such large single doses are well above the safe permissible dose for the hands of the therapist. The wall of the shield is 1.2 cm thick, and protects against beta particles with maximum energies as high as 2.0 Mev. Its construction reduces the need for elaborate decontamination procedures, since simplicity of assembly obviates contamination of the shield by radiation, and contamination of the syringe by bacteria.

A high speed scaler, developed by the Atomic Energy Research Establishment (AERE), Harwell, England, is a fast scale-of-ten counter, including an input amplifier discriminator, which is designed for use in front of a normal type scaler to extend the upper limit of counting rate into the range 100,000 - 1,000,000 counts per second. Amplitude range is 5-50 volts, and it will operate on pulses of 0.05 microseconds or greater width. Resolution time of the complete unit (including discriminator) is 0.25 microseconds. Details of the scaler may be obtained on application to the AERE at Harwell, mentioning specification 109.

Results of recent experiments in the metallurgy laboratories of Sam Tour and Co., Inc., New York, have indicated that minute parts can be successfully examined by x-ray methods. A fragment of a very thin stainless steel tube that had fractured in use was examined; the tube was 0.025-in. OD, x 0.013-in. ID, and about 5/8-in. long. Visual examination revealed nothing, but x-rays of the tube fragments indicated the possible presence of defects in the wall. The x-rays were repeated, using a sensitive technique, and voids in the wall were clearly apparent. Subsequently, microscopic examination of the mounted specimen confirmed the voids in the wall at the point indicated by the x-rays.

SERVICES & OTHER NEWS...of nuclear firms...

A service for the disposal of natural radioactive wastes, which is being offered by Canadian Radium and Uranium Corporation, New York 20, to commercial organizations and Government agencies, is designed to overcome contamination problems which may result from the use of radioactive materials. Special equipment has been designed by Canadian Radium to handle the accumulation and disposal of any radioactive wastes, in the form of instrument parts, old dials, paper, rags, sweepings, etc. (See AEN 12/5/50, p.4: "Costly damage to photographic supplies from radioactive contamination...experienced by E. I. du Pont de Nemours & Co.")

Nuclear Instrument and Chemical Corporation, Chicago, manufacturer of devices for nuclear applications, has now opened an office at Los Angeles, Calif. (1061 Colorado Blvd.), and has appointed two additional firms to represent it in this country. National Spectrographic Laboratories, Cleveland, Ohio, will cover Ohio and lower Michigan for Nuclear, while Earl Lipscomb Associates, Dallas and Houston, Texas, will cover Texas, Louisiana, Arkansas, Oklahoma, and most of New Mexico.

A simple and less expensive I-131 and P-32 service by Tracerlab, Inc., Boston 10, Mass. now furnishes these radioisotopes (which are widely used in medicine) in amounts up to 100 mc upon 48-hours notice. The units are packaged in a sterilized glass vial, 5/8" in diameter, and 2-5/8" high, with a rubber stopper which can be punctured by a hypodermic needle. The manufacturer notes that this service, which furnishes these isotopes standardized, and ready for therapeutic applications, makes a "hot lab" unnecessary for the therapist who wishes to use iodine-131 and phosphorous-32.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear energy field...

Atomic Energy and the Hydrogen Bomb, by Dr. Gerald Wendt, former Dean of the School of Chemistry and Physics, Pennsylvania State College. An extremely readable non-technical approach to the potentialities of nuclear energy, both for constructive purposes, and as a weapon of warfare. (Concerning radiological warfare, Dr. Wendt writes," No warning, no shelters, and no amount of dispersion is adequate defense against...the use of radioactive materials spread broadcast into the air by a bomb explosion". This NEWSLETTER-- 9/12/50, p.4-- pointed out that current "guide books" generally neglect radioactive materials and hence cannot be relied upon for proper atomic defense measures.) 192 pages. --Medill McBride Co., Inc., Inc., 200 E. 37th St., New York. ($2.75)

Manual of Analytical Methods for the Determination of Uranium and Thorium in Their Ores. A compilation of methods for the analysis of pitchblende, carnotite-bearing sandstone, shales, phosphate rock, and monazite sands. This manual (prepared by the technical staff of the USAEC's New Brunswick, N.J. analytical laboratory) is intended principally for chemists and assayers, and is a step in the USAEC's drive to have commercial laboratories take over uranium mineral analysis for prospectors and miners. The work is now handled largely by laboratories of the Bureau of Mines, Geological Survey, and the USAEC.--Superintendent of Documents, Wash. 25, D.C. (20¢)

Instruments and Accessories for Radioisotope Application. Published by the British instrument manufacturers association in collaboration with the Atomic Energy Research Establishment, Harwell.--Scientific Instrument Manufacturer's Association, 17, Princes Gate, London, S. W. 7, (Eng.) (n/c)

ATOMIC PATENT DIGEST...latest U. S. applications & grants...

GRANTS- Apparatus for changing the ion source of a cyclotron. In a cyclotron having a tubular anode with an upwardly extending portion adjacent its inner end, and a tubular cathode within this anode, means for removing this cathode, comprising: a longitudinal track extending outwardly from one end of the cyclotron, with a carriage on this track, and connected to the outer end of the cathode; an air lock about the outer end of the cathode; driving means for moving the carriage along the track; and a door, which may be moved across the open end of the anode, after the cathode has been removed from within it, and prior to removing the cathode from the air lock. U. S. Pat. No. 2,531,065, issued Nov. 21, 1950; assigned to Collins Radio Co., Cedar Rapids, Ia.

Pocket radiation alarm. A radiation alarm device, incorporating a thermionic tube, means to energize its grid in the presence of radiation products, etc. An increase in the tube's anode current, in response to the energization of the grid, actuates a relay, and in turn an alarm is sounded. U. S. Pat. No. 2,531,106, issued Nov. 21, 1950; assigned to United States of America (USAEC).

Method of purifying beryllium oxide. In this process for the purification of beryllia from the impurities normally associated with it, beryllia is heated in contact with steam to a temperature from 1000 deg. C., to the melting point of beryllia. The resultant beryllia-containing vapor is then cooled to yield a condensate of beryllia. U. S. Pat. No. 2,531,143, issued Nov. 21, 1950; assigned to United States of America (USAEC).

Coincidence proportional counter for measuring the energy spectrum of a particle-emitting ionizing source. Comprises (in part): A chamber containing argon gas within which are several ring-shaped collecting electrodes around a wire-like electrode; a coincidence amplifier circuit to which these ring-like electrodes are separately connected, etc., with a conduit for admitting gas into the chamber. U. S. Pat. No. 2,531,144, issued Nov. 21, 1950; assigned to United States of America (USAEC).

Means for grounding cables. An electrically conductive frame, grounded at several points, has a mass of electrically conductive filamentous material packed in it as a blanket, around shielded electrical cables. The material is in intimate electrical contact with the cable shields; further, these cable shields are also electrically connected to the frame. U. S. Pat. No. 2,531,183, issued Nov. 21, 1950; assigned to United States of America (USAEC).

RAW MATERIALS...radioactive ores & other materials for nuclear work...

UNITED STATES- Grants, New Mexico: A preliminary geological survey of a carnotite discovery made last Summer some 20 miles northeast of this town now indicates that the host rock may extend for 80 miles between Grants and Gallup, N.M., in a 6 to 10 mile wide belt. In the six mile stretch of limestone already sampled, the rock will run from 1/10 to 1/4 of one per-cent in uranium oxide, according to Thomas Evans, chief mining engineer for the Santa Fe railroad which holds all mineral rights on the land embracing the find.

Marysvale, Utah: This area, now under active exploitation for its radioactive minerals, is yielding ores consisting of the secondary mineral autunite, a calcium-uranium phosphate, and some pitchblende underlying the autunite. About 150 tons of these uranium ores are being produced per day, largely from the Farmer John open pit of the Bullion-Monarch Mining Co., and from the Freedom and Prospector leases of the Vanadium Corp. of America. Pitchblende has been produced only from the Prospector. All ores from here go to the USAEC's ore buying depot at Marysvale.

UNION OF SOUTH AFRICA- The entire output of uranium compounds, to be recovered from the gold mines here, will be sold exclusively to the United States and Great Britain, under a contractual agreement signed by representatives of the three nations in Johannesburg last month. Funds for construction of the necessary plant will be loaned to the Union, under the agreement. Preliminary to this agreement was experimental work which had shown the presence of uranium compounds in practically all the Witwatersand gold ores, and in the Orange Free State as well. (Mr. Louw, the South African Minister of Mines, has said that the uranium content of the gold ores was low, and that this could not be expected to save the life of the low-grade gold mines.) The first South African gold mining companies to take part in the program will be: West Rand Consolidated Mines, Ltd.; Daggafontein Mines, Ltd.; Blyvooruitzicht Gold Mining Co., Ltd.; and Western Reefs Exploration and Development Co., Ltd.

CANADA- Gilbert A. LaBine, discoverer of Eldorado (Canadian uranium ore producer; one of the world's top three in pitchblende output) recently stated that the pitchblende finds on the properties of Nesbitt LaBine Uranium Mines, were superior to Eldorado after an equal amount of work. Nesbitt LaBine is on the north shore of Beaverlodge lake, seven air miles from the town of Goldfields, Saskatchewan. It is some 600 miles south of the Eldorado mine, which is at Great Bear Lake, and hence more accessible by water and road. LaBine has said that the find is good enough to warrant sinking two shafts; supplies will be brought in next Spring, when weather permits. Finances will be raised privately; LaBine estimates $1,000,000.00 as a conservative figure to prepare for production.

ATOMIC ENERGY; AT THE AAAS MEETING IN CLEVELAND, OHIO...

The American Association for the Advancement of Science, meeting in Cleveland, December 26-30, will hear a number of papers in the field of atomic energy. As part of the Physics Section, Henry D. Smyth, Eugene P. Wigner, and John A. Swartout will deliver papers under the program of the Oak Ridge National Laboratory, and Institute of Nuclear Studies. In addition, a seminar on "Ten Years of Atomic Energy-A Report of Progress", under the same sponsorship, will cover the outlook for atomic power; military developments in atomic energy and how private industry can participate in the development of atomic energy. The Physics Section will also hear "Implications of Nuclear Phenomena in Geology", and "Implications of Nuclear Phenomena in Biology". The Engineering Section will hear H. L. Friedell on "The Human Body and Nuclear Engineering", as well as a symposium on Nuclear Engineering. At the Symposium on Radiobiology, occupying two complete days, consisting of four sessions, some 23 papers will be presented. Some typical ones: W. L. Russell, on "The Genetic Effects of Radiation in Mammals"; S. Koletsky, on "Effects of Radioactive Iodine on the Rat Thyroid", and A. K. Solomon, on "The Effects of Radiation on Some Chemical Compounds".

Sincerely,

The Staff,
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